

Quantum Q2000 Series® 8" Fixed Disk Drives



The Quantum Q2000 Series is a family of 10-, 20-, 30- and 40-megabyte 8" fixed disk drives in an 8" floppy-size package. These reliable Winchester drives provide OEMs with an upgrade path from floppy disk and low-capacity Winchester-based systems.

Q2000 drives are fully compatible with the current industry-standard SA1000/Q2000 Winchester drives, yet provide sufficient storage capacity to satisfy most commercial applications, at a lower cost per megabyte.

The higher capacity and low cost are the result of a proprietary track positioning system. Quantum uses a rotary moving coil actuator and patented temperature compensation servo instead of a conventional stepper motor actuator. This provides twice the track density and per-disk capacity without increasing cost.

Power supply and mounting requirements are fully compatible with industry-standard 8" floppy drives. Drive control and data signals use the same pin assignments as compatible floppy drives, allowing daisy-chaining of fixed and floppy drives.

DC voltage requirements are identical to those for standard floppy drives and data cartridge streamers. The same power supply can be used for the Q2000 and various back-up drive options.

Key Features

- 10.7, 21.3, 32.0 and 42.7 megabytes (unformatted) storage capacities
- Full interface, format and power supply compatibility with the current industry-standard 8" Win-

chester drives

- Physical dimensions and mounting holes identical to those of standard 8" floppy disk drives
- 4.34 megabits per second transfer rate
- Available in AC or DC power options
- Proven Winchester head and media technology
- Rotary moving coil actuator with patented temperature compensation servo
- Faster access times than stepper motor actuator drives
- Fail-safe head landing and shipping zone
- Half the heat dissipation of comparable drives
- Microprocessor control for drive logic and positioner system—includes self-diagnostics
- Single external PCB

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Q2000 8" Fixed Disk Drives

Recording Media

- Winchester lubricated magnetic iron oxide coating on a 200mm diameter aluminum substrate
- 5.33 megabytes (unformatted) of data per disk surface
- 512 tracks per disk surface

Read/Write Heads

- Winchester (IBM 3340) type flying heads
- Low mass/low load force
- Reliable contact start/stop operation
- Heads return to a "fail-safe landing zone" during power-off and shipping

Air Filtration System

- Disks and read/write heads fully sealed in clean air chamber
- Recirculating air system with absolute filter
- Absolute breather air filter permits pressure equalization with ambient air without contamination

Rotary Moving Coil Actuator

- Pure torque motor with balanced forces to maximize bearing life
- Simple construction

- Ring magnet and two flat-plate magnetic structure
- Single-plane moving coil
- Two-bearing structure
- Two-phase driver electronics

- Statically-balanced structure for high mechanical stability and maximum vibration resistance

- Low power consumption

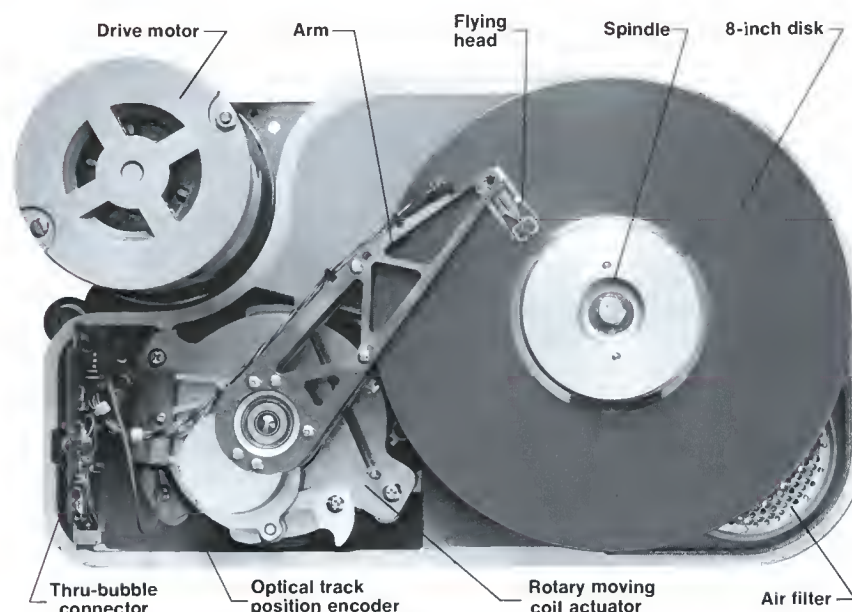
- Average access time up to 20% faster than stepper motor actuators

Optical Track Position Encoder

- Track positioning resolution better than 40 micro-inches
- Reliable glass reticle/LED/photodiode technology

Temperature Compensation Servo

- Direct track position feed back from disk surface
- Transparent to controller and host system
- Track location coding embedded between last inter-record gap and index pulse
- Microprocessor-controlled calibration of optical track position reference from servo feedback once each revolution



Specifications

Performance	Q2010	Q2020	Q2030	Q2040
Capacity				
Unformatted				
per drive	10.66 Mb	21.33 Mb	32.00 Mb	42.66 Mb
per surface	5.33 Mb	5.33 Mb	5.33 Mb	5.33 Mb
per track	10.40 Kb	10.40 Kb	10.40 Kb	10.40 Kb
Formatted (MFM)				
per drive	8.40 Mb	16.80 Mb	25.20 Mb	33.60 Mb
per surface	4.20 Mb	4.20 Mb	4.20 Mb	4.20 Mb
per track	8.20 Kb	8.20 Kb	8.20 Kb	8.20 Kb
per sector	256 bytes	256 bytes	256 bytes	256 bytes
sectors/track	32	32	32	32
Transfer rate	4.34 Mbits/sec	4.34 Mbits/sec	4.34 Mbits/sec	4.34 Mbits/sec
Access time*				
Track to track	15 ms	15 ms	15 ms	15 ms
Average	55 ms	60 ms	60 ms	65 ms
Maximum	100 ms	100 ms	100 ms	105 ms
Avg. latency	10 ms	10 ms	10 ms	10 ms

* Typical at nominal temperature and power

Functional	Q2010	Q2020	Q2030	Q2040
Rotational speed	3000 RPM	3000 RPM	3000 RPM	3000 RPM
Recording density	6600 bpi	6600 bpi	6600 bpi	6600 bpi
Flux density	6600 fci	6600 fci	6600 fci	6600 fci
Track density	345 tpi	345 tpi	345 tpi	345 tpi
Cylinders	512	512	512	512
Tracks	1024	2048	3072	4096
Read/Write heads	2	4	6	8
Disks	1	2	3	4
Index	1	1	1	1

Physical

Environmental limits

- Ambient temperature = 50° to 115°F (10° to 46°C)
- Relative humidity = 8% to 80%
- Maximum wet bulb = 78° non-condensing

AC power requirements (AC power option only)

- 50/60 Hz \pm 0.5 Hz
- 100/115 VAC installations = 90-127V at 1.0A typical
- 200/230 VAC installations = 180-253V at 0.5A typical

DC voltage requirements

- +24 VDC \pm 10% 3.0A typical (DC power option only)
- +24 VDC \pm 10% 1.25A typical (AC power option only)
- +5 VDC \pm 5% 1.0A typical
- 5 VDC \pm 5% (-7 to -16 VDC optional) 0.2A typical

Mechanical dimensions

- Height = 4.50 in. (114.3 mm)
- Width = 8.55 in. (217.2 mm)
- Depth = 14.25 in. (362.0 mm)
- Weight = 19 lbs. (8.6 Kg)

Heat dissipation = 235 BTU/hour typical (70 watts)

Reliability

MTBF: 12,000 POH typical usage

PM: not required

MTTR: 30 minutes

Component life: 5 years

Error rates:

- Soft read errors: 1 per 10¹⁰ bits read
- Hard read errors: 1 per 10¹² bits read
- Seek errors: 1 per 10⁶ seeks

Specifications subject to change without notice.

QUANTUM

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